

Autoignition temperature

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The **autoignition temperature**, or the ignition temperature of a substance is the lowest temperature at which a chemical will spontaneously ignite in a normal atmosphere, without an external source of ignition, such as a flame or spark. This temperature is required to supply the activation energy needed for combustion. The temperature at which a chemical will detonate decreases as the pressure increases or oxygen concentration increases. It is usually applied to a combustible fuel mixture

Similar to the *autoignition temperature* is the flash point, which is the lowest temperature at which a substance can form an ignitable mixture with air. This point is always less than the *autoignition temperature*, but the *activation energy* needed for combustion can be supplied by an external source of ignition, such as a spark.

Autoignition temperatures are measured using the same closed cup apparatus used for measuring flash points. The commonly accepted autoignition temperature of paper, 451 °F (233 °C), is well known because of the popular novel *Fahrenheit 451* by author Ray Bradbury (although the actual autoignition temperature depends on the type of pulp used in the paper's manufacture, chemical content, paper thickness, etc.)

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Autoignition Point of Selected Substances

- Silane: >21°C (70°F)
- White phosphorus: 34°C (93°F)
- Carbon disulfide: 100°C (212°F)
- Gasoline: 257°C (495°F)
- n-Butane: 282°C (540°F)
- Magnesium: 473°C (883°F)
- Hydrogen: 571°C (1060°F)

Autoignition Equation

Exhibit A



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from German marine insurers

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Cotton

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Exhibit B1-B

compression is diminished, which at the same time results in an increased supply of oxygen to the inside of the bales. This in turn increases the risk of combustion or feeds a fire which has already started. Bursting or chafing of the steel straps and wires may lead to sparking and external ignition.

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Risk factors and loss prevention

RF Temperature

Cotton requires particular temperature, humidity and possibly ventilation conditions (SC VI) (storage climate conditions).

Designation	Temperature range	Source
Favorable travel temperature range	no lower limit - < 25°C	[1]
Optimum travel temperature	20°C	[1]
Autoignition temperature (for oily cotton)	120°C	[1]
Glow temperature	205°C	[1]
Fire point	210°C	[1]
Ignition temperature	407°C	[1]

At temperatures > 25°C, cotton dries out, becomes hard and brittle and losses elasticity. Light causes the same deterioration. The optimum temperature for mold development is 25 - 35°C.

Cotton is subject to self-heating/spontaneous combustion. The autoignition temperature of oily cotton is 120°C.

At temperatures < 0°C there is no risk of wet bales rotting, since this process stops at low temperatures. In some cases, damaged cotton has been placed in intermediate cold storage, so

Safety (MSDS) data for polyethylene

General

Synonyms: polythene, ethylene resin, numerous trade names

Molecular formula: $[C_2H_4]_n$ (typical molecular weight 100,000 - 500,000)

CAS No: 9002-88-4

EC No:

Physical data

Appearance: solid; appearance depends upon method of forming; generally available as a white powder, but once formed is often sold as clear sheets

Melting point: 130 - 145 C, depending on molecular weight

Boiling point:

Vapour density:

Vapour pressure:

Specific gravity: typically 0.92

Flash point: 221 C

Explosion limits:

Autoignition temperature:

Stability

Stable, but breaks down slowly in uv light or sunlight. Incompatible with halogens, strong oxidizing agents, benzene, petroleum ether, aromatic and chlorinated hydrocarbons, lubricating oils.

Toxicology

Exhibit C